Published in final edited form as:

Addiction. 2017 January ; 112(1): 146–155. doi:10.1111/add.13594.

Motivational, reduction, and usual care interventions for smokers who are not ready to quit: A randomized controlled trial

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Abstract

Aims—To test whether, in comparison to usual care, brief motivational or reduction interventions increase quit attempts (QA) or abstinence among smokers who are not ready to quit.

Design—A parallel-group randomized controlled trial of brief motivational ($n=185$), reduction ($n=186$), or usual care ($n=189$) telephone interventions delivered over the course of 4 weeks. Outcomes were assessed at 6- and 12-month follow-ups. No medication was provided.

Setting—United States.

Participants—560 adult smokers of 10 cigarettes per day who were not ready to quit in the next 30 days.

Measurements—The primary outcomes were whether participants made a QA that lasted 24 hours and whether they made a QA of any length between baseline and 6-months. Secondary outcomes included 7-day point-prevalence abstinence at 6- and 12-months. The 12-month follow-up was added after the study began.

Findings—A-priori defined comparisons were between motivational versus usual care and reduction versus usual care conditions. The probability of making a QA that lasted 24 hours was not significantly different between the motivational (38%) or the reduction (31%) conditions and the usual care (34%) condition (motivational versus usual care odds ratio (OR)=1.19 95% confidence interval (CI)=0.78 to 1.82; reduction versus usual care OR=0.89 95% CI=0.57 to 1.36). Bayes factors ranged from 0.13 to 0.18. Findings regarding a QA of any length were similar. At 6 months, the motivational condition had marginally more abstinence than usual care (11% versus

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Disclosure:

Elias Klemperer, Laura Solomon, Peter Callas and James Fingar have nothing to disclose.

Clinical Trial Registration: www.clinicaltrials.gov (<http://www.webcitation.org/6iaQgmCqL>) NCT01866722

5% OR=2.17 95% CI=0.99 to 4.77) but the reduction condition was not significantly different from usual care (8% versus 5% OR=1.57 95% CI=0.69 to 3.59). At 12 months, the motivational condition had significantly more abstinence than usual care (10% versus 4% OR=2.80 95% CI=1.14 to 6.88) and the reduction condition had marginally more abstinence than usual care (9% versus 4% OR=2.45 95% CI=0.98 to 6.09).

Conclusions—Among adult smokers who are not ready to quit, both logistic regression and Bayesian analysis indicate that neither motivational nor reduction-based telephone interventions increased the odds of making a quit attempt in comparison to usual care at 6 months. The motivational intervention appeared to increase abstinence at 6 months and did increase abstinence at 12 months. The reduction intervention did not increase abstinence at 6 months but appeared to increase abstinence at 12 months.

Introduction

Currently, over 1.1 billion people smoke tobacco worldwide and approximately 6 million die from smoking related illness each year (1). In the United States, there has been a dramatic decline in smoking since the Surgeon General's Report on Smoking and Health in 1964 (2). However, the prevalence of smoking has decreased less than 5% in the last decade (3). This is due, in part, to the fact that most adult smokers are not ready to make a quit attempt (QA) in the near future (4). Making a QA predicts future cessation (5–7); thus, increasing QAs in the majority of smokers who are not ready to quit is one potential strategy to decrease the prevalence of smoking.

Usual care for those who are not ready to quit typically consists of a physician asking about smoking, providing brief advice to quit, and offering treatment (8). Motivational interventions (5, 9–12) and reduction in cigarettes per day (CPD) aided by nicotine replacement therapy (NRT) (5, 13, 14) are also efficacious strategies.

Prior studies found that motivational interviewing (MI) increases QAs and abstinence in smokers who are not ready to quit (12, 15, 16). The United States Public Health Service's (USPHS) Clinical Practice Guideline currently recommends an abbreviated version of MI, the 5Rs intervention, to facilitate quitting in smokers without plans to quit in the near future (17). A previous trial by our group tested the 5Rs with participants who were offered free NRT if they decided to quit (5). This was the only direct test of the 5Rs. The odds of making a QA were 5.6 times greater and the odds of abstinence were 6.3 times greater for those who received the 5Rs intervention in comparison to no treatment (5). Given these unusually large effect sizes, research is needed to replicate these findings.

Since the last USPHS Clinical Practice guidelines were published, several studies have demonstrated that NRT-aided reductions in CPD increase QAs and abstinence in smokers who do not plan to quit in the near future (5, 18, 19). The extent to which this is due to NRT pretreatment vs reduction in CPD per se remains unclear. Several observational studies suggest reduction without NRT is associated with increased cessation (20–22). In addition, our recent review found that a greater magnitude of reduction in CPD in smokers not ready to quit is associated with a greater odds of future cessation (23). These studies suggest

reduction unaided by NRT could be effective. This is important because most smokers do not want to use smoking cessation medications (24, 25).

Few prior studies have examined the effect of non-pharmacological interventions to reduce smoking on QAs and abstinence (26–28). One was a randomized trial and included a usual care comparison group (29). Though QAs were not reported, the study found that reduction in CPD did not significantly increase point-prevalence abstinence (29). Thus, more research is needed to determine if reduction counseling without NRT increases QAs and abstinence in smokers who are not ready to quit.

The present study examined a brief motivational intervention (i.e., the 5Rs) and a brief reduction-based intervention without NRT for smokers who are not ready to quit smoking in the near future. Our primary aims were to test whether the motivational vs the usual care interventions and whether the reduction vs usual care interventions increased the odds of making (a) a QA that lasted ≥ 24 hours and (b) a QA that lasted any length of time from baseline to 6 months. Our secondary aims were to test whether the motivational or reduction interventions increased the odds of being abstinent at (c) 6-month, and (d) 12-month follow-ups.

We determined a priori that we would not compare the motivational to the reduction intervention because we believed it is best to first replicate our previous findings for the motivational intervention (5) and determine whether reduction without NRT is effective. Further, a sample size large enough for this comparison was not feasible.

Methods

Design

We conducted a 3-arm, randomized controlled trial (RCT) using a national sample of smokers (N=560). The study was approved by the Committee on the Use of Human Subjects in Research at the University of Vermont and posted on www.clinicaltrials.gov (<http://www.webcitation.org/6iaQgmCqL>) (NCT01866722). We made some changes from our initial posting on www.clinicaltrials.gov. We did not distinguish between QAs that last ≥ 24 hours and those that last any length of time in our initial posting. However, these distinctions were made a priori in our protocol. We added a 12-month follow-up after the study began. We changed from prolonged abstinence at 6 months as a secondary outcome to point-prevalence abstinence at 6 and 12 months. Finally, our initial posting on www.clinicaltrials.gov included a number of secondary hypotheses regarding changes in CPD, intention to quit, decisional balance, and self-efficacy. These findings will be reported in a subsequent manuscript.

Participants

Recruitment—We recruited 560 participants in the United States from October 2013 to June 2014 via email invitations to the Nielsen (<http://www.webcitation.org/6iaQvMxR2>) consumer panel of over 350,000 participants (see Figure 1). Participants in the Nielsen panel are individuals who use the Internet and elected to receive invitations to participate in a variety of online surveys in return for points redeemable for products and services. This

national panel is based on multiple sources and meets or exceeds the 26 ESOMAR criteria for representative online samples (<https://www.esomar.org/>). Nielsen recruited participants by sending emails to their participants, including both smokers and non-smokers.

Sample Size—In our previous trial, we had a no-treatment comparison condition and found an odds ratio of 5.6 for the motivational and 4.2 for the NRT-aided reduction intervention for whether or not participants made a QA that lasted 24 hours over the first 6 months (5). However, because we did not include NRT in the present study and did include an active control group, we expected an odds ratio of only 2.0; i.e. 20% vs 33%. To obtain a power of 0.8 with a two-sided alpha of 0.05 to detect an odds ratio of 2.0 for whether or not participants make a QA that lasts 24 hours requires a sample size of 172 per group for a total of 516 participants.

Inclusion Criteria—Major inclusion criteria were (a) 18-year-old daily smoker of 10 cigarettes per day (CPD), (b) no change in CPD by $\pm 25\%$ or more in the last month, (c) no use of nicotine or tobacco products other than cigarettes nor cessation treatments in the last month, and (d) a desire to quit someday but not in the next 30 days. The study invitation was sent to a random subsample of Nielsen participants and was not restricted to current smokers. The large majority of those invited did not respond to our recruitment invitation (Figure 1). The major reason for exclusion among those who responded was not smoking cigarettes every day. Few eligible participants declined to participate.

Procedures

Participants were enrolled by Nielsen (<http://www.webcitation.org/6iaQvMxR2>). One of us (PC) designed a computer-generated block randomization schedule stratified by counselor to assign participants to receive a motivational intervention, a reduction intervention, or usual care (Figure 1). We provided all interventions by telephone and did not provide any medication. We time-matched the motivational and reduction conditions with an initial 15-minute call followed by two 10- to 15-minute calls two and four weeks later (total of 35 to 45 minutes). The usual care condition consisted of a single 5-minute call (Table 1). We did not time match calls in the usual care condition so that this condition would represent the duration of real world usual care for smokers who have no current plans to quit (30). During their last call, we advised participants in all three conditions to make a QA and offered them a mailing that included a self-help booklet (NCI's "Clearing the Air") and a handout listing medication and cessation counseling options they could pursue on their own if they attempted to quit [Insert link to Resources to Stop Smoking Supporting Information]. We ended the study one year after the last of the a priori determined 560 participants enrolled in the study.

Interventions

Usual Care—The usual care condition was based on a prior description of usual care (30). The intervention included a single 5-minute telephone call during which counselors asked questions about the participants' smoking, advised participants to quit, and offered the treatment information described above. See [Insert link to Usual Care Intervention Supporting Information] for our usual care intervention manual.

Motivational Intervention—Brief motivational counseling was based on the USPHS 5Rs protocol (17) and was a replication of the motivational intervention found to be effective in our prior study (5), except that we did not offer NRT at the conclusion of the motivational intervention in the current study. The intervention included certain MI strategies (such as develop discrepancy and support self-efficacy) but not others (such as roll with resistance). The intervention focused on participants' (a) **relevant** reasons for quitting, (b) **risks** of smoking of concern to the smoker, (c) **rewards** of smoking cessation, (d) **roadblocks** to quitting, and (e) **repetition** of the topics (17). In this study, counselors addressed the first three topics in the first call (week 0) by eliciting and reinforcing participants' reasons for wanting to quit someday as well as their perceived risks of smoking and their perceived rewards of quitting. Counselors continued that discussion during the second call (week 2) and helped participants identify and problem-solve roadblocks to quitting. In the third call (week 4) counselors reviewed and repeated messages from the first two calls and concluded with advice to quit smoking. See [Insert link to Motivational Intervention Supporting Information] for our motivational intervention manual.

Reduction Intervention—The reduction counseling was an update of the intervention found to be effective in our prior study of NRT-aided reduction (5) except no NRT or other medications were used in the current study. We did not include NRT in our reduction intervention in order to increase the potential application of our findings for the majority of smokers who do not want to use smoking cessation medication (24, 25) and to test whether reducing CPD per se (i.e., not pre-treatment with NRT) increases QAs. The first counseling call (week 0) began with discussion regarding how reduction might increase QAs. Counselors then encouraged participants to set their own goals for reduction in number of cigarettes smoked. Counselors recommended setting goals that were likely to be met in order to increase self-efficacy. Counselors and participants proceeded to discuss the pros and cons of two strategies for reduction: (a) scheduled reduction; i.e., smoking on a schedule and increasing time between cigarettes, and (b) hierarchical reduction, eliminating certain cigarettes beginning with those that are the easiest to give up (31, 32). Counselors reviewed progress, answered questions and helped participants adjust their goals to increase chances of success during the second call (week 2). During the third call (week 4), counselors elicited what was learned from reduction and reinforced any success that the participant reported. Counselors concluded with advice to quit smoking. See [Insert link to Reduction Intervention Supporting Information] for our reduction intervention manual.

Counselors—The four counselors had or were pursuing graduate degrees in social work or clinical psychology. They each completed 13 hours of training guided by structured treatment manuals for each of the three treatment conditions. One author (LS) provided the training and observed counseling calls approximately five times per month to ensure fidelity to the interventions. Once assigned to a counselor, most participants (86%) received all their calls from the same counselor to maintain continuity of care.

Measures

Outcomes and internal validity checks were reported via online surveys weekly during the four week intervention period, monthly during the 6-month follow-up, and finally at a 12-month follow-up (Table 1).

Primary Outcomes—The primary outcome was a QA between baseline and 6 months. While a QA is traditionally defined as 24 hours of abstinence, recent evidence suggests that most attempts last < 24 hours (7). Thus we included QAs that lasted (a) 24 hours and (b) any length as our primary outcomes.

Secondary Outcomes—Self-reported 7-day point-prevalence abstinence was assessed at 6- and 12-months. We originally planned a 6-month study; thus, our a-priori hypotheses are based on outcomes at 6 months. We later decided to include 12-month outcomes and re-consented as many participants as possible to assess abstinence at 12 months as a secondary outcome. We did not use biochemical verification of abstinence because prior telephone counseling studies found that less than half of participants were willing to provide samples through the mail (33), and, more importantly, the Society for Research on Nicotine and Tobacco (SRNT) states that verification is usually not necessary when treatment contact is minimal (34).

Internal Validity Checks—For an internal validity check of the motivational intervention, we used Velicer's "Pros vs Cons" scales (35) to measure decisional balance, which is an important component of motivational interventions (36). The "Pros vs Cons" scales appear to have good construct, discriminant, convergent and predictive validity (37). We used self-reported CPD to assess whether the reduction intervention had its intended effect.

Analyses

We used logistic regression to examine the interventions as predictors of the primary and secondary outcomes. As an internal validity check, we used linear regressions to test whether (a) the motivational intervention changed decisional balance and (b) the reduction intervention decreased CPD more than usual care. In a supplemental analysis, we generated curves representing participants' time to first QA using the Kaplan-Meier method and compared them with Wilcoxon (more sensitive to differences at earlier follow-ups) and Log Rank (more sensitive to differences at later follow-ups) tests (38) [Insert Link to Time to First QA Supplemental Information]. We conducted analyses regarding time to first QA with SAS v9.4 (Cary, NC: SAS Institute Inc.) and all other analyses with SPSS (IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp.)

Missing Data

Of the 560 total participants, 171 (31%) were missing data on whether or not they made a QA during the first 6 months, and 205 (37%) were missing data on whether or not they were abstinent at the 6-month follow-up. Half (51%) missed the additional 12-month follow-up survey. The amount of missing data for all outcomes did not differ among conditions nor were baseline characteristics associated with missing data. We assumed missing data indicated no QA or continued smoking in our primary analyses. We conducted sensitivity

analyses where we (a) imputed using multiple imputation (39) and (b) excluded missing data. In both cases there were no substantial differences in findings compared to the primary analyses.

Results

Compared to population-based samples of current daily smokers in the US (24, 40, 41) (Table 2), smokers in our study appear (a) to be older, (b) to smoke more CPD at baseline, (c) to be more dependent on cigarettes at baseline, and more likely (d) to be women, (e) to be white, non-Hispanic, and (f) to have > 12 years of education. More participants in our sample have used a medication or counseling to make a past QA and fewer have tried to quit without treatment than the average US smoker (24). There were no significant differences in participant characteristics and smoking history among conditions.

Quit Attempts

At the 6-month follow-up, there were no significant differences between the motivational and usual care conditions nor between the reduction and usual care conditions in the incidence of participants who made a 24-hour QA or a QA of any length (Table 3). Because our primary findings were not statistically significant, we computed Bayes factors (BF) to assess whether the results indicate stronger evidence for the null hypothesis ($BF < 1$), the alternative hypothesis ($BF > 1$), or neither ($BF = 1$) (42). Bayes factors for the primary outcomes ranged from 0.13 to 0.18, which indicates moderate evidence for the null hypothesis (43).

Median time to report the first 24-hour QA was at one month for the usual care, three months for the motivational, and two months for the reduction condition. Time to first 24-hour QA (a) was significantly longer for the motivational than the usual care condition (Wilcoxon $\chi^2 = 10.65$, $p < .01$; Log Rank $\chi^2 = 5.70$, $p < .05$) and (b) appeared to be longer for the reduction than the usual care condition (Wilcoxon $\chi^2 = 6.06$, $p < .05$; Log Rank $\chi^2 = 3.37$, $p = .07$). See [Insert Link to Time to First QA Supplemental Information] for Kaplan-Meier curves and findings regarding time to first QA of any length.

Abstinence

The motivational condition had marginally significantly more abstinence than usual care at 6 months ($p = .05$) and significantly more abstinence at 12 months ($p < .05$). The reduction condition was not significantly different from usual care at 6 months but had marginally significantly more abstinence at 12 months ($p = .06$) (Table 3). Among the 192 participants who made a QA that lasted 24 hours or more, marginally more were abstinent in the Motivational than the Usual Care condition at 6 months (Motivational=29%, Usual Care=16%; OR=2.16, 95% CI=0.92 to 5.06; $p = 0.08$) and significantly more were abstinent at 12 months (Motivational=24%, Usual Care=11%; OR=2.61, 95% CI=1.00 to 6.80; $p < 0.05$). There was slightly but not significantly more abstinence in the Reduction than the Usual Care condition at 6 months (Reduction=26%, Usual Care=16%; OR=1.88, 95% CI=0.77 to 4.61) and 12 months (Reduction=21%, Usual Care=11%; OR=2.12, 95%

CI=0.77 to 5.83). Findings were similar among participants who made a QA that lasted any length of time.

Adverse Events

No adverse events were reported during the study or follow-up periods.

Internal Validity Checks

Adjusting for demographics, smoking history, and prior methods used to quit smoking (Table 2) did not materially alter the results reported above. In terms of compliance, 84% in the motivational and 77% in the reduction condition completed all three counseling calls (see Figure 1). We examined change in the participants' decisional balance (35) and CPD to explore possible reasons for the nonsignificant findings. After controlling for baseline scores, the motivational intervention resulted in little change in participants' decisional balance from baseline to the end of treatment, and the change did not significantly differ from usual care.

When controlling for baseline CPD, the reduction intervention had a greater reduction in CPD from baseline to the end of treatment at week 4 (19%) than usual care (9%; Standardized Beta=0.19, $p<.001$).

Discussion

This study did not replicate our prior findings (5) nor support our primary hypothesis that motivational and reduction interventions would increase QAs more than usual care among smokers who were not ready to quit. Analyses of secondary outcomes found that the motivational intervention marginally increased abstinence at 6 months and significantly increased abstinence at 12 months in comparison to usual care. The reduction intervention did not affect abstinence at 6 months but marginally increased abstinence at 12 months. Finally, internal validity checks suggest that the motivational intervention did not change decisional balance, but the reduction intervention successfully reduced CPD in comparison to usual care.

Our usual care comparison condition had an incidence of 24-hour QAs (34%) that was similar to the motivational (38%) and the reduction (31%) conditions. In contrast, our previous trial had an incidence of 24-hour QAs that was much lower in the no-treatment comparison condition (16%) and higher in the motivational (51%) and NRT-aided reduction (43%) conditions (5). Our use of a usual care instead of a no-treatment comparison condition in the present trial may be one reason we did not replicate our prior findings. Another possible reason is that we did not offer free NRT to participants in the active treatment conditions who decided to quit. In our previous trial, counselors ended the last counseling call by saying "if you want to quit, we can help you with either nicotine patch or gum" (5). Most participants in the motivational (59%) and many in the reduction (40%) conditions received NRT in an effort to quit during the follow up period (5). This may have served as an added incentive to make a QA in our previous trial. In contrast, the absence of free medication may have been a barrier to quitting in the present study.

The motivational intervention in the present trial did not affect participants' decisional balance (pros and cons of smoking) more than usual care. Unfortunately, we did not collect data on decisional balance in our prior trial, so no comparison is possible. In both studies, we focused on issues related to quitting that the participants generated, not on the range of pros and cons of smoking that are reflected in the decisional balance measure. That might account for the lack of change observed on the measure, but it does not explain the fewer QAs observed in the motivational condition in this study compared to the prior study. The recent Cochrane meta-analysis of motivational interventions found that those as brief as ours were, not only effective, but as effective as more intensive interventions (44). That meta-analysis also found that MI delivered by physicians was more effective than those that were not. Our trial had counselors who had no prior history of contact with these smokers; however, this was also true in our prior study, which had positive results.

One explanation for our non-significant findings in the reduction condition is that our counseling, which encouraged participants to set their own reduction goals, did not achieve large enough reductions in CPD to significantly increase QAs. Smokers' magnitude of reduction in CPD appears to be associated with quitting (23). The 19% reduction in CPD in the present study's reduction condition had little effect on QAs, but the 30% reduction in our prior trial significantly increased QAs (5). In the prior study, reduction was aided by NRT, which may have encouraged and enabled more substantial reduction efforts. One prior RCT of reduction without NRT found that, in comparison to usual care, a reduction intervention did not increase cessation (29). A more recent RCT found that, in comparison to no treatment, a reduction intervention without NRT increased QAs, point-prevalence, and prolonged abstinence (45). However, it is unclear whether our non-significant findings are due to a lack of NRT, an insufficient magnitude of reduction, a combination of the two, or our use of a usual care comparison condition.

A likely explanation for the finding that the motivational and reduction conditions had a longer time to first QA than usual care is that the motivational and reduction interventions provided advice to quit during week four of the trial, at the conclusion of counseling. In contrast, the usual care condition provided advice to quit during the first week of the trial. The early advice to quit in the usual care condition may have contributed to the shorter time to first QA.

The motivational intervention had no effect on QAs but had a positive effect on abstinence; a similar non-significant trend occurred with reduction. One apparent interpretation is that our interventions increased the success but not the likelihood of a QA. Such a pattern is not unexpected as a meta-analysis found that variables that predict QAs differ from those that predict the success of a QA (46). More specifically, and consistent with our results, a meta-analysis of MI found that the effects of treatment were greater for abstinence than QAs (12). Findings from a meta-analysis on whether reduction prior to a QA increases quit success are less clear (47). However, a recent large, well-done trial found that reduction did not increase abstinence for smokers planning to quit. Given that we did not a priori hypothesize this pattern of outcomes, we had a large amount of missing data for one of the follow-ups (51% at 12 months), and most of the abstinence findings were marginally significant, our abstinence outcomes should be interpreted with caution.

Assets and Limitations

One asset of this study was that it was a longitudinal trial that utilized a large, national sample of smokers in the United States. The RCT design facilitated internal validity and the pragmatic design facilitated external validity. The trial successfully recruited participants who had no intention to quit smoking in the next month. Almost all participants completed the majority of their counseling calls.

Our major limitations have been discussed above: the lack of impact of the motivational intervention on decisional balance, and the modest reduction in CPD in the reduction condition. One other limitation is that we did not include a true no-treatment group; thus, the trial could not assess whether the three interventions were equally effective or whether none were effective. However, given the strong evidence that the usual care intervention we used (48) and motivational (44) interventions are effective, we believe the former is more likely. Another potential limitation is that QAs and abstinence were not biochemically verified. Further, the majority of smokers were not eligible for the trial, thus it is possible that there was sampling bias. Our prior trial used a third party vendor to recruit participants via telephone (5). The present trial used the same vendor but recruited via email, which could have contributed to the difference between the studies' outcomes. Finally, as is common for studies with minimal contact (49), we had a substantial amount of missing data at follow-up surveys.

Conclusion

Given the plateau in the decline in smoking prevalence in the last ten years (3), more research is needed to identify new strategies to increase QAs among smokers who are not ready to quit. The present trial found that both the USPHS recommended 5Rs and an intervention to reduce CPD without NRT were no better than usual care at increasing QAs. Future research should test 5Rs interventions that focus on a broader range of pros and cons of smoking as well as reduction interventions that encourage greater reductions in CPD without NRT.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

John Hughes has received consulting and speaking fees from several companies that develop or market pharmacological and behavioral treatments for smoking cessation or harm reduction and from several non-profit organizations that promote tobacco control. He also consults (without payment) for Swedish Match.

Funding:

This work was supported by research grant NCI CA163176 from the National Cancer Institute (JH) and training grant T32 DA 7242-23 from the National Institute on Drug Abuse (EK).

We thank Mathew Carpenter for his consultation and Tonya Ferraro, Amy Huckins-Noss, Jennifer Kerns, Erin Kretzer, and Janine Zimmie for their assistance.

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Figure 1.
Participant flow diagram.

Table 1

Timing of interventions and measures.

	Baseline (1 st Call)	Week 1	Week 2 (2 nd Call)	Week 3	Week 4 (3 rd Call)	2-6 Months Post Tx	12 Month Post Tx
Treatment							
Usual care	x ^a						
Motivational intervention (5Rs)	x		x		x ^a		
Reduction intervention	x		x		x ^a		
Internal Validity Measures							
Cigarettes per day	x	x	x	x	x	x	x
Decisional balance ^b	x	x	x	x	x	x	x
Outcome Measures							
Quit attempts		x	x	x	x	x	x
Point-prevalence abstinence		x	x	x	x	x	x

^a Call when counselors provided brief advice to set a quit date;

^b Velicer WF, DiClemente CC, Prochaska JO, Brandenburg N. Decisional balance measure for assessing and predicting smoking status. *J Pers Soc Psychol.* 1985;48(5):1279-89. Tx= Treatment.

Table 2

Participants' characteristics and smoking history.^a

	Usual Care (n=189)	Motivational (n=185)	Reduction (n=186)	Total (N=560)	NHIS ^b and other surveys ^{c,d}
Demographics					
Mean Age	50 (11)	50 (12)	53 (11)	51 (11)	42 ^b
% Women	66	68	67	67	46 ^b
% White, non-Hispanic	86	88	87	87	78 ^b
% With > 12 years of education	70	67	71	69	39 ^b
% Employed full time	41	32	37	37	-
% Married	49	45	51	48	-
Smoking history					
Mean CPD	20 (8.3)	20 (8.5)	20 (8.4)	20 (8.4)	16 ^b
Mean number of QA in life	3.4 (4.8)	3.6 (7.1)	3.3 (3.5)	3.4 (5.3)	-
Mean age at onset of smoking	18 (7.5)	18 (6.9)	18 (6.4)	18 (6.9)	17 ^b
Mean FTCD	5.4 (1.9)	5.4 (2.0)	5.3 (2.1)	5.4 (2.0)	4.3-4.6 ^c
Mean intention to quit in the next month	3.0 (2.3)	3.1 (2.5)	2.9 (2.4)	3.0 (2.4)	-
Mean longest QA in days	256 (754)	366 (1,057)	314 (813)	312 (883)	-
Median longest QA in days	21	30	29	28	-
Prior methods used to quit smoking					
% Used NRT, bupropion or varenicline	51	49	47	49	32 ^d
% Used counseling	7	7	12	9	4 ^d
% Received advice from doctor	16	20	19	18	-
% Tried to quit without any of the above methods	37	40	37	38	64 ^d

^aStandard deviations in parentheses;^bHughes JR, Callas PW. Data to assess the generalizability of samples from studies of adult smokers. *Nicotine & Tobacco Research*. 2010;12:73-6;^cFagerstrom K, Furgerg H. A comparison of the Fagerstrom Test for Nicotine Dependence and smoking prevalence across countries. *Addiction*. 2008;103:841-5;

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CPD=Cigarettes per day; FTCD=Fagerstrom Test for Cigarette Dependence (1=lowest dependence, 10=highest dependence); NHIS=United States National Health Interview Survey; NRT=Nicotine replacement therapy; QA=Quit attempts; Intention to quit in the next month (0=very definitely no, 10=very definitely yes).

Table 3

Quit attempts and abstinence.

	<i>Condition</i>		
	Usual Care (n= 189)	Motivational Intervention (5Rs) (n=185)	Reduction Intervention (n=186)
Quit attempts by 6 months			
<u>24 hour QA (n)</u>	34% (64)	38% (70)	31% (58)
OR (95% CI)	1.0	1.19 (0.78 to 1.82)	0.89 (0.57 to 1.36)
<u>QA of any length (n)</u>	47% (88)	51% (94)	47% (87)
OR (95% CI)	1.0	1.19 (0.79 to 1.78)	1.01 (0.67 to 1.51)
Abstinence			
<u>Month 6 point prevalence^a(n)</u>	5% (10)	11% (20)	8% (15)
OR (95% CI)	1.0	2.17 (0.99 to 4.77)	1.57 (0.69 to 3.59)
<u>Month 12 point prevalence^a(n)</u>	4% (7)	10% (18)	9% (16)
OR (95% CI)	1.0	2.80 (1.14 to 6.88)	2.45 (0.98 to 6.09)

^a7-day point-prevalence abstinence;

CI=Confidence interval; OR=Odds ratio; QA=Quit attempt.